

NAEP 2011 NONRESPONSE BIAS ANALYSIS REPORT

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1. NONRESPONSE BIAS ANALYSIS IN THE 2011 NAEP

NCES statistical standards call for a nonresponse bias analysis to be conducted for a sample with a response rate below 85 percent. Weighted school response rates for 2011 NAEP indicate a need for school nonresponse bias analyses for private school samples for grades 4 and 8 (paper-based operational subjects), for public school samples of the Bureau of Indian Education (BIE) for grades 4 and 8, and for private school samples for computer-based writing at grades 8 and 12. Based on the weighted response rate for mathematics, a student nonresponse bias analysis is necessary for the grade 8 public school student sample in Detroit.

Based on the weighted school response rate for science, the grade 8 public school sample in Colorado also needs a nonresponse bias analysis. All eighth grade sampled schools in an entire county in Colorado refused the science session, but participated in the reading and mathematics sessions. Colorado grade 8 public schools were weighted as participants based on their participation in mathematics and reading, and the issue of nonresponse was dealt with at the student level. Thus a nonresponse bias analysis at school-level would not be able to reflect the school nonparticipation for science appropriately. Therefore, the Colorado grade 8 public school science nonresponse bias analysis is performed at student level, but for school characteristics. This is because these are the characteristics that might be affected by the school nonresponse for science. Note that we expect nonresponding students in Colorado to be predominantly from the one nonresponding county, but there were some other nonresponding students in other counties as well.

Response rates for schools and students are shown in tables 1 and 2, respectively.

Table 1. Weighted school response rates, before substitution

	Domain	Response Rate
Grade 4	Private	73.51
	BIE (public)	83.26
Grade 8	Private	74.40
	BIE (public)	83.16
	Computer-based Writing (private)	71.21
	Colorado (public, science)	84.41
Grade 12	Computer-based Writing (private)	67.23

Table 2. Weighted student response rates

	Domain (public)	Response Rate
Grade 8	Detroit (TUDA) mathematics	84.39

The analyses conducted in this report consider only certain characteristics of schools and students. They do not directly consider the effects of the nonresponse on student achievement; the primary focus of NAEP. Thus, these analyses cannot be conclusive of either the existence or absence of nonresponse bias for student achievement (see Peytcheva and Groves, 2009).

2. SCHOOL NONRESPONSE BIAS ANALYSIS

The school analysis, required for private school samples in grades 4 and 8 (operational subjects), for public school samples for the Bureau of Indian Education (BIE) in grades 4 and 8, and for private school samples in grades 8 and 12 doing computer-based writing, was conducted in three parts.

1. The distribution of the responding original school sample was compared with that of the entire eligible original school sample. Schools were weighted by their school base weights and their enrollment, referred to as a size-adjusted weight. The original sample is the sample before substitution.
2. The distribution of the responding sample, including participating substitutes was compared to the full sample (but in this case, substitutes were included in place of those nonrespondents that they replaced). Again, the size-adjusted school base weights were used for both the full sample and the respondents.
3. The same sets of schools were compared as in the second analysis, but this time when analyzing the responding schools alone, school nonresponse adjustments were applied to the size adjusted weights.

The first part of the analysis indicates the potential for nonresponse bias that was introduced through school nonresponse. The second part of the analysis suggests the remaining potential for nonresponse bias after the mitigating effects of substitution have been accounted for. The third part indicates the potential for bias after accounting for the mitigating effects of both substitution and nonresponse weight adjustments. Both the second and third parts, however, may provide an overly optimistic scenario, since even though substitution and nonresponse adjustments may correct somewhat for deficiencies in the few characteristics examined here, there is no guarantee that they are equally as effective for other characteristics, and in particular for student achievement.

In each analysis, chi-square tests of association were conducted between school response status and each of the following four categorical variables:

- Census region;
- Reporting subgroup for private schools;
- Urban-centric locale; and
- Estimated grade enrollment divided into three equally sized categories.

The chi-square tests were carried out using procedures that appropriately account for the complex sample design used in NAEP, and the weighting procedures. The Rao-Scott chi-square test (Rao and Scott, 1984) was computed using WesVar (Westat 2002), where this test is referred to as ‘RS3’.

In addition, mean values of race/ethnicity percentages and enrollment for responding and nonresponding schools were compared. Two measures of the mean size of enrollment in the respective grades were considered, one using the size adjusted school weight (mean size of school attended by an average student), and the other using the school weight without the size adjustment (mean estimated grade enrollment). Differences between the means for the respondents and full sample were tested using t-tests. These tests also took account of the complex sample design, as well as the fact that the respondents are a subset of the full sample (thus in that sense the first two sets of comparisons, using only school base weights, are equivalent to testing whether the mean for respondents is significantly different from the mean for nonrespondents).

The results of these analyses for grades 4 and 8 private schools doing operational subjects, and for grades 4 and 8 public schools for BIE, and for grades 8 and 12 private schools doing computer-based writing are presented in the tables in appendix A, and summarized in tables 3, 4, 5, and 6, respectively. The BIE samples at grades 4 and 8 consisted of a census of schools, and so all differences between the responding and original samples are statistically significant.

Table 3. Characteristics with p-values less than 0.05, grade 4 private schools

Analysis	Characteristics with p-values less than 0.05
Original sample	Census Region, Reporting Subgroup, Locale, Estimated grade enrollment, Race/Ethnicity
Sample with substitutes	Census Region, Reporting Subgroup, Locale, Size, Estimated grade enrollment
Nonresponse adjusted	Census region, Size, Size of school attended by average student

Table 4. Characteristics with p-values less than 0.05, grade 8 private schools

Analysis	Characteristics with p-values less than 0.05
Original sample	Census Region, Reporting Subgroup, Size, Estimated grade enrollment, Race/Ethnicity
Sample with substitutes	Census Region, Reporting Subgroup, Size, Estimated grade enrollment, Size of school attended by average student, Race/Ethnicity
Nonresponse adjusted	Size, Race/Ethnicity

Table 5. Characteristics with p-values less than 0.05, grade 8 private schools (computer-based writing)

Analysis	Characteristics with p-values less than 0.05
Original sample	Census Region, Reporting subgroup, Locale
Sample with substitutes	Reporting subgroup, Locale, Race/Ethnicity
Nonresponse adjusted	N/A

Table 6. Characteristics with p-values less than 0.05, grade 12 private schools (computer-based writing)

Analysis	Characteristics with p-values less than 0.05
Original sample	Reporting subgroup, Size, Size of school attended by average student, Race/Ethnicity
Sample with substitutes	Reporting subgroup, Size, Size of school attended by average student, Race/Ethnicity
Nonresponse adjusted	Race/Ethnicity

In general, nonresponse adjustments decreased the number of variables with significant differences. For grades 4 and 8 private operational, and grades 8 and 12 private computer-based writing, substitution and nonresponse adjustments appear to have been at least partially effective in reducing the nonresponse bias, as the important variable “private school reporting group” in each sample changed to non-significant after substitution and nonresponse adjustments.

However, the biases of some other variables were still significant, or newly significant, after nonresponse adjustments. For grade 4 private, results were non-significant after nonresponse adjustments with the exception of census region and school size. The result for the census region variable was improved by nonresponse adjustments as the largest significant absolute bias changed from 3.87 to 2.33. However, the result for the school size variable changed from non-significant to significant after substitution and nonresponse adjustments, with the largest change in bias from 0.06 (non-significant) to the absolute value of 3.18 (significant). Absolute bias for “size of school attended by average student” went from 2.72 (non-significant) to 4.47 (significant) after nonresponse adjustments.

The phenomenon that nonresponse adjustments potentially increase bias for grade 4 appears to be explained by the tendency of larger non-Catholic schools to not participate and school size not being a specific characteristic for school nonresponse weight adjustments. Thus, when making adjustments to address the underrepresentation of non-Catholic schools among the respondents, non-large schools are then over-represented at the expense of larger schools.

For grade 8 private, after nonresponse adjustments, the results for school size and race still have significant bias. The significant bias for school size showed little change, with 2.95 the largest absolute bias before nonresponse adjustment and 3.25 the largest bias after nonresponse adjustment. As observed for grade 4 private, absolute bias increased for larger size schools, from 2.03 to 3.25 for grade 8 private. The largest absolute bias among all race percentage variables for grade 8 private before substitution and nonresponse adjustments was 1.19 (significant) for percentage Hispanic heritage, and this decreased to 0.59 (non-significant). The absolute bias for percentage White, not Hispanic, increased from 0.92 (non-significant) to 1.51 (significant) where the t-test P-value of 0.045 shows the significance to be weak. The results for Percentage Black, not Hispanic, changed from non-significant to significant after nonresponse adjustments, the absolute bias increasing from 0.37 (non-significant) to 1.56 (significant) and the relative bias from 4.3% to 18%, suggesting there is potentially significant bias for school percentage race characteristic after adjustments.

Results for grade 8 private doing computer-based writing showed no significant bias for any school characteristic after substitution and nonresponse adjustments. Grade 12 private doing computer-based writing continued to show significant bias for race (Percentage Asian/Pacific Islander) after nonresponse adjustments, where the nonresponse adjustments did not appear to have an affect on the absolute bias, which went from 1.57 to 1.69.

3. STUDENT NONRESPONSE BIAS ANALYSIS

The analysis of student nonresponse bias was required for the grade 8 public school student mathematics sample in the Detroit TUDAs. Additionally, a student nonresponse bias analysis was required to handle the special case of session nonresponse in the science sample in grade 8 Colorado public schools.

This analysis was conducted in two parts:

1. The distribution of the responding student sample was compared with that of the entire eligible sample of students, using student base weights; and
2. The distribution of the responding student sample was compared to the entire eligible sample of students. This time, when analyzing the responding students alone, student nonresponse adjustments were applied to the weights.

The first part of the analysis indicates the potential for nonresponse bias that was introduced through student nonresponse. The second part of the analysis indicates the potential for bias after accounting for the effects of nonresponse weight adjustments. The second part, however, may provide an overly optimistic scenario, since even though nonresponse adjustments may correct somewhat for deficiencies in the few characteristics examined here, there is no guarantee that they are equally as effective for other characteristics, and in particular for student achievement.

The following student characteristics were used in the comparisons:

- Sex;
- Race/ethnicity;
- Relative age;
- Free or reduced price lunch eligibility;
- Student Disability (SD) status; and
- English Language Learner (ELL) status.

For Colorado, additional school characteristics were used in the comparisons:

- Census region;
- Urban-centric locale;

- Estimated grade enrollment divided into three equally sized categories; and
- State-based achievement divided into two equally sized categories.

For these analyses, chi-square tests of the association between student response status and the particular variable under consideration were conducted. These tests were carried out using procedures that appropriately account for the complex sample design used in NAEP, and the weighting procedures (RS3).

Additionally in Colorado, mean values of school level race/ethnicity percentages, school enrollment, and school average state-based achievement levels (non-NAEP) for responding and nonresponding students were compared. Differences between the means for the respondents and full sample were tested using t-tests. These tests also took account of the complex sample design, as well as the fact that the respondents are a subset of the full sample (thus in that sense the comparison is equivalent to testing whether the mean for respondents is significantly different from the mean for nonrespondents).

The results of these analyses are presented in the tables in appendix B, and are summarized in table 7, 8, and 9 below.

Table 7. Characteristics with p-values less than 0.05, domains of grade 8 public school students in Detroit

Domain	Analysis	Characteristics with p-values less than 0.05
Detroit TUDA Mathematics	Student base weights	Relative Age, SD, ELL
	Nonresponse adjusted student weights	N/A

Table 8. Student characteristics with p-values less than 0.05, domains of grade 8 public school students in Colorado

Domain	Analysis	Characteristics with p-values less than 0.05
Colorado Science	Student base weights	Race/Ethnicity, ELL
	Nonresponse adjusted student weights	N/A

Table 9. School characteristics with p-values less than 0.05, domains of grade 8 public school students in Colorado

Domain	Analysis	Characteristics with p-values less than 0.05
Colorado Science	Student base weights	Urban-centric locale, Achievement level, Average Student Achievement of School Attended by Average Student, Race/Ethnicity
	Nonresponse adjusted student weights	Achievement level, Average Student Achievement of School Attended by Average Student, Race/Ethnicity

When considering student characteristics in both Detroit and Colorado, the nonresponse adjustments seem to remove the bias. There are no remaining significant differences for either jurisdiction after the adjustments.

There are some school characteristics in Colorado in which there may be some remaining bias after nonresponse adjustment. There are some remaining significant differences in race/ethnicity and achievement level. The size of the biases in school level race/ethnicity percentages between responding students and the full sample are quite small, with the largest absolute bias being 1.84. However, the bias for achievement levels is higher (3.27). It does not seem that the nonresponse adjustment had the effect of completely correcting the bias in achievement scores.

REFERENCES

- Peytcheva, E., and Groves, R.M. (2009). Using Variation in Response Rates of Demographic Subgroups as Evidence of Nonresponse Bias in Survey Estimates. *Journal of Official Statistics*, **25**, 193-201.
- Rao, J.N.K., and Scott, A.J. (1984). On Chi-Squared Tests for Multiway Contingency Tables with Cell Proportions Estimated from Survey Data. *Annals of Statistics*, **12**, 46-60.
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Appendix A

Table A-1. 2011 NAEP grade 4 original sample - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 646)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	21.39	17.52	-3.87	-0.181	0.000
Midwest	26.04	28.18	2.14	0.082	
South	32.96	32.63	-0.33	-0.010	
West	19.62	21.67	2.05	0.104	
Private school reporting subgroup					
Roman Catholic	44.64	58.18	13.54	0.303	0.000
Conservative Christian	15.72	15.59	-0.13	-0.008	
Lutheran	4.64	5.96	1.32	0.284	
Other Private	35.00	20.27	-14.73	-0.421	
Urban-centric locale					
City	41.02	43.49	2.47	0.060	0.000
Suburban	39.33	36.57	-2.76	-0.070	
Town	7.41	9.13	1.72	0.232	
Rural	12.24	10.81	-1.43	-0.117	
Size					
Large (≥ 29)	54.91	54.97	0.06	0.001	0.070
Medium (17-28)	23.97	25.46	1.49	0.062	
Small (≤ 16)	21.13	19.56	-1.57	-0.074	

NOTE: Size-adjusted school weights were used.

Table A-2. 2011 NAEP grade 4 original sample - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	41.02	38.30	-2.72	-0.066	0.143
Estimated grade enrollment	20.85	22.49	1.64	0.079	0.003
Race/ethnicity					
Percentage White, not Hispanic	74.48	72.67	-1.81	-0.024	0.011
Percentage Black, not Hispanic	8.79	9.20	0.40	0.046	0.274
Percentage Hispanic heritage	10.18	11.23	1.05	0.103	0.028
Percentage Asian/Pacific Islander	5.75	6.08	0.33	0.057	0.217
Percentage American Indian/Alaskan Native	0.79	0.83	0.03	0.038	0.788

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-3. 2011 NAEP grade 4 sample with substitutes - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 646)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	21.39	17.17	-4.21	-0.197	0.000
Midwest	26.04	27.94	1.91	0.073	
South	32.96	33.46	0.50	0.015	
West	19.62	21.43	1.81	0.092	
Private school reporting subgroup					
Roman Catholic	44.64	52.67	8.03	0.180	0.000
Conservative Christian	15.72	16.34	0.62	0.039	
Lutheran	4.64	5.41	0.77	0.166	
Other Private	35.00	25.58	-9.42	-0.269	
Urban-centric locale					
City	41.02	43.10	2.08	0.051	0.029
Suburban	39.33	37.41	-1.93	-0.049	
Town	7.41	8.33	0.92	0.124	
Rural	12.24	11.16	-1.08	-0.088	
Size					
Large (≥29)	54.91	54.31	-0.60	-0.011	0.002
Medium (17-28)	23.97	25.98	2.01	0.084	
Small (≤16)	21.13	19.72	-1.41	-0.067	

NOTE: Size-adjusted school weights were used.

Table A-4. 2011 NAEP grade 4 sample with substitutes - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	41.02	37.96	-3.06	-0.075	0.095
Estimated grade enrollment	20.85	22.08	1.23	0.059	0.011
Race/ethnicity					
Percentage White, not Hispanic	74.48	73.28	-1.20	-0.016	0.077
Percentage Black, not Hispanic	8.79	9.12	0.33	0.038	0.286
Percentage Hispanic heritage	10.18	10.49	0.31	0.030	0.414
Percentage Asian/Pacific Islander	5.75	6.37	0.62	0.108	0.147
Percentage American Indian/Alaskan Native	0.79	0.74	-0.05	-0.063	0.638

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-5. 2011 NAEP grade 4 nonresponse-adjusted sample - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 646)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	21.39	19.05	-2.33	-0.109	0.000
Midwest	26.04	28.13	2.10	0.081	
South	32.96	32.80	-0.16	-0.005	
West	19.62	20.02	0.40	0.020	
Private school reporting subgroup					
Roman Catholic	44.64	44.51	-0.13	-0.003	N/A
Conservative Christian	15.72	15.72	-0.01	-0.001	
Lutheran	4.64	4.63	-0.01	-0.002	
Other Private	35.00	35.15	0.15	0.004	
Urban-centric locale					
City	41.02	42.81	1.79	0.044	0.376
Suburban	39.33	37.76	-1.57	-0.040	
Town	7.41	7.54	0.13	0.018	
Rural	12.24	11.88	-0.36	-0.029	
Size					
Large (≥29)	54.91	51.73	-3.18	-0.058	0.015
Medium (17-28)	23.97	26.51	2.54	0.106	
Small (≤16)	21.13	21.76	0.64	0.030	

NOTE: Size-adjusted school weights were used.

Table A-6. 2011 NAEP grade 4 nonresponse-adjusted sample - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	41.02	36.55	-4.47	-0.109	0.019
Estimated grade enrollment	20.85	20.84	-0.01	0.000	0.986
Race/ethnicity					
Percentage White, not Hispanic	74.48	73.23	-1.25	-0.017	0.184
Percentage Black, not Hispanic	8.79	9.34	0.55	0.063	0.178
Percentage Hispanic heritage	10.18	9.85	-0.33	-0.032	0.407
Percentage Asian/Pacific Islander	5.75	6.83	1.08	0.188	0.131
Percentage American Indian/Alaskan Native	0.79	0.74	-0.05	-0.063	0.633

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-7. 2011 NAEP grade 8 original sample - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 804)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	24.01	21.06	-2.95	-0.123	0.000
Midwest	24.77	29.26	4.49	0.181	
South	32.60	31.84	-0.76	-0.023	
West	18.63	17.83	-0.80	-0.043	
Private school reporting subgroup					
Roman Catholic	47.36	59.38	12.02	0.254	0.000
Conservative Christian	15.42	14.95	-0.47	-0.030	
Lutheran	4.56	5.68	1.12	0.246	
Other Private	32.66	19.98	-12.68	-0.388	
Urban-centric locale					
City	42.26	41.00	-1.26	-0.030	0.125
Suburban	37.95	40.02	2.07	0.055	
Town	7.39	7.83	0.44	0.060	
Rural	12.40	11.16	-1.24	-0.100	
Size					
Large (≥31)	56.23	54.20	-2.03	-0.036	0.003
Medium (18-30)	25.47	28.42	2.95	0.116	
Small (≤17)	18.30	17.38	-0.92	-0.050	

NOTE: Size-adjusted school weights were used.

Table A-8. 2011 NAEP grade 8 original sample - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	45.46	43.66	-1.80	-0.040	0.213
Estimated grade enrollment	22.63	24.07	1.44	0.064	0.008
Race/ethnicity					
Percentage White, not Hispanic	75.74	74.82	-0.92	-0.012	0.120
Percentage Black, not Hispanic	8.65	9.02	0.37	0.043	0.275
Percentage Hispanic heritage	9.60	10.80	1.19	0.124	0.003
Percentage Asian/Pacific Islander	5.49	4.86	-0.63	-0.115	0.162
Percentage American Indian/Alaskan Native	0.52	0.51	0.00	0.000	0.971

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-9. 2011 NAEP grade 8 sample with substitutes - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 804)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	24.01	21.04	-2.97	-0.124	0.000
Midwest	24.77	27.20	2.43	0.098	
South	32.60	33.00	0.40	0.012	
West	18.63	18.76	0.13	0.007	
Private school reporting subgroup					
Roman Catholic	47.36	54.87	7.51	0.159	0.000
Conservative Christian	15.42	15.72	0.29	0.019	
Lutheran	4.56	5.19	0.64	0.140	
Other Private	32.66	24.22	-8.44	-0.258	
Urban-centric locale					
City	42.26	41.38	-0.89	-0.021	0.465
Suburban	37.95	39.21	1.26	0.033	
Town	7.39	7.80	0.41	0.055	
Rural	12.40	11.62	-0.78	-0.063	
Size					
Large (≥31)	56.23	54.57	-1.66	-0.030	0.000
Medium (18-30)	25.47	27.97	2.50	0.098	
Small (≤17)	18.30	17.46	-0.84	-0.046	

NOTE: Size-adjusted school weights were used.

Table A-10. 2011 NAEP grade 8 sample with substitutes - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	45.46	42.72	-2.74	-0.060	0.039
Estimated grade enrollment	22.63	23.86	1.24	0.055	0.003
Race/ethnicity					
Percentage White, not Hispanic	75.74	75.07	-0.67	-0.009	0.215
Percentage Black, not Hispanic	8.65	9.29	0.64	0.074	0.034
Percentage Hispanic heritage	9.60	10.34	0.73	0.076	0.015
Percentage Asian/Pacific Islander	5.49	4.82	-0.67	-0.122	0.122
Percentage American Indian/Alaskan Native	0.52	0.49	-0.02	-0.038	0.676

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-11. 2011 NAEP grade 8 nonresponse-adjusted sample - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 804)

	Full sample weighted percentage	Respondent weighted percentage			Relative bias	Chi-square p-value
Census region						
Northeast	24.01	23.83	-0.18		-0.007	0.450
Midwest	24.77	24.89	0.12		0.005	
South	32.60	32.61	0.01		0.000	
West	18.63	18.68	0.05		0.003	
Private school reporting subgroup						
Roman Catholic	47.36	47.52	0.16		0.003	0.560
Conservative Christian	15.42	15.31	-0.11		-0.007	
Lutheran	4.56	4.56	0.00		0.000	
Other Private	32.66	32.61	-0.05		-0.002	
Urban-centric locale						
City	42.26	41.06	-1.21		-0.029	0.615
Suburban	37.95	39.30	1.36		0.036	
Town	7.39	7.23	-0.16		-0.022	
Rural	12.40	12.41	0.01		0.001	
Size						
Large (≥31)	56.23	52.98	-3.25		-0.058	0.003
Medium (18-30)	25.47	27.78	2.32		0.091	
Small (≤17)	18.30	19.24	0.94		0.051	

NOTE: Size-adjusted school weights were used.

Table A-12. 2011 NAEP grade 8 nonresponse-adjusted sample - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	45.46	43.06	-2.40	-0.053	0.247
Estimated grade enrollment	22.63	22.74	0.12	0.005	0.820
Race/ethnicity					
Percentage White, not Hispanic	75.74	74.24	-1.51	-0.020	0.045
Percentage Black, not Hispanic	8.65	10.21	1.56	0.180	0.002
Percentage Hispanic heritage	9.60	10.19	0.59	0.061	0.217
Percentage Asian/Pacific Islander	5.49	4.88	-0.61	-0.111	0.189
Percentage American Indian/Alaskan Native	0.52	0.48	-0.03	-0.058	0.582

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-13. 2011 NAEP grade 4 original sample - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE) (sample size =132)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast/South	7.30	7.77	0.47	0.064	0.000
Midwest	21.45	19.55	-1.90	-0.089	
West	71.25	72.68	1.43	0.020	
Urban-centric locale					
Non-rural	8.84	9.82	0.98	0.111	0.000
Rural fringe	17.51	14.86	-2.65	-0.151	
Rural, distant	17.55	19.03	1.49	0.085	
Rural, remote	56.10	56.29	0.19	0.003	
Size					
Large (≥ 25)	59.44	56.77	-2.67	-0.045	0.000
Medium (14-24)	27.82	30.81	2.99	0.107	
Small (≤ 13)	12.74	12.42	-0.32	-0.025	

NOTE: Size-adjusted school weights were used.

Table A-14. 2011 NAEP grade 4 original sample - weighted mean values of various characteristics for full sample and responding schools - public schools for Bureau of Indian Education (BIE)

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	34.50	35.04	0.54	0.016	N/A
Estimated grade enrollment	22.71	22.29	-0.43	-0.019	N/A

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-15. 2011 NAEP grade 4 sample with substitutes - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE) (sample size =132)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast/South	7.30	7.77	0.47	0.064	0.000
Midwest	21.45	19.55	-1.90	-0.089	
West	71.25	72.68	1.43	0.020	
Urban-centric locale					
Non-rural	8.84	9.82	0.98	0.111	0.000
Rural fringe	17.51	14.86	-2.65	-0.151	
Rural, distant	17.55	19.03	1.49	0.085	
Rural, remote	56.10	56.29	0.19	0.003	
Size					
Large (≥ 25)	59.44	56.77	-2.67	-0.045	0.000
Medium (14-24)	27.82	30.81	2.99	0.107	
Small (≤ 13)	12.74	12.42	-0.32	-0.025	

NOTE: Size-adjusted school weights were used.

Table A-16. 2011 NAEP grade 4 sample with substitutes - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE)

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	34.50	35.04	0.54	0.016	N/A
Estimated grade enrollment	22.71	22.29	-0.43	-0.019	N/A

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-17. 2011 NAEP grade 4 nonresponse-adjusted sample - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE) (sample size = 132)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast/South	7.30	7.73	0.43	0.059	0.000
Midwest	21.45	19.16	-2.28	-0.106	
West	71.25	73.10	1.85	0.026	
Urban-centric locale					
Non-rural	8.84	9.73	0.89	0.101	0.000
Rural fringe	17.51	14.84	-2.67	-0.152	
Rural, distant	17.55	19.58	2.04	0.116	
Rural, remote	56.10	55.85	-0.26	-0.005	
Size					
Large (≥ 25)	59.44	59.44	0.00	0.000	0.841
Medium (14-24)	27.82	27.82	0.00	0.000	
Small (≤ 13)	12.74	12.74	0.00	0.000	

NOTE: Size-adjusted school weights were used.

Table A-18. 2011 NAEP grade 4 nonresponse-adjusted sample - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE)

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	34.50	35.80	1.30	0.038	N/A
Estimated grade enrollment	22.71	22.57	-0.14	-0.006	N/A

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-19. 2011 NAEP grade 8 original sample - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE) (sample size =111)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast/South	9.11	9.86	0.75	0.082	0.000
Midwest	24.90	23.81	-1.09	-0.044	
West	65.99	66.33	0.34	0.005	
Urban-centric locale					
Non-rural	9.84	11.09	1.25	0.127	0.000
Rural fringe	15.31	15.30	-0.01	-0.001	
Rural, distant	20.31	22.97	2.67	0.131	
Rural, remote	54.54	50.64	-3.90	-0.072	
Size					
Large (≥ 26)	63.03	61.03	-2.01	-0.032	0.000
Medium (14-25)	24.10	26.26	2.16	0.090	
Small (≤ 13)	12.87	12.71	-0.16	-0.012	

NOTE: Size-adjusted school weights were used.

Table A-20. 2011 NAEP grade 8 original sample - weighted mean values of various characteristics for full sample and responding schools - public schools for Bureau of Indian Education (BIE)

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	42.89	41.71	-1.18	-0.028	N/A
Estimated grade enrollment	24.71	24.27	-0.45	-0.018	N/A

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-21. 2011 NAEP grade 8 sample with substitutes - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE) (sample size =111)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast/South	9.11	9.86	0.75	0.082	0.000
Midwest	24.90	23.81	-1.09	-0.044	
West	65.99	66.33	0.34	0.005	
Urban-centric locale					
Non-rural	9.84	11.09	1.25	0.127	0.000
Rural fringe	15.31	15.30	-0.01	-0.001	
Rural, distant	20.31	22.97	2.67	0.131	
Rural, remote	54.54	50.64	-3.90	-0.072	
Size					
Large (≥ 26)	63.03	61.03	-2.01	-0.032	0.000
Medium (14-25)	24.10	26.26	2.16	0.090	
Small (≤ 13)	12.87	12.71	-0.16	-0.012	

NOTE: Size-adjusted school weights were used.

Table A-22. 2011 NAEP grade 8 sample with substitutes - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE)

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	42.89	41.71	-1.18	-0.028	N/A
Estimated grade enrollment	24.71	24.27	-0.45	-0.018	N/A

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-23. 2011 NAEP grade 8 nonresponse-adjusted sample - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE) (sample size = 111)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast/South	9.11	9.46	0.35	0.038	0.000
Midwest	24.90	25.14	0.24	0.010	
West	65.99	65.40	-0.59	-0.009	
Urban-centric locale					
Non-rural	9.84	9.84	0.00	0.00	0.715
Rural fringe	15.31	15.31	0.00	0.00	
Rural, distant	20.31	20.31	0.00	0.00	
Rural, remote	54.54	54.54	0.00	0.00	
Size					
Large (≥ 26)	63.03	63.15	0.12	0.002	0.000
Medium (14-25)	24.10	24.85	0.76	0.032	
Small (≤ 13)	12.87	11.99	-0.88	-0.068	

NOTE: Size-adjusted school weights were used.

Table A-24. 2011 NAEP grade 8 nonresponse-adjusted sample - weighted percentages of full sample and responding schools by various subgroups - public schools for Bureau of Indian Education (BIE)

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	42.89	41.18	-1.72	-0.040	N/A
Estimated grade enrollment	24.71	24.77	0.06	0.002	N/A

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-25. 2011 NAEP grade 8 computer-based writing original sample - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 140)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	23.71	19.60	-4.11	-0.173	0.032
Midwest	24.93	30.69	5.76	0.231	
South	31.96	30.62	-1.34	-0.042	
West	19.40	19.09	-0.31	-0.016	
Private school reporting subgroup					
Roman Catholic	44.06	59.10	15.04	0.341	0.000
Non-Catholic Private	55.94	40.90	-15.04	-0.269	
Urban-centric locale					
City	42.21	40.90	-1.31	-0.031	0.021
Suburban	38.47	40.12	1.65	0.043	
Town	9.64	12.87	3.23	0.335	
Rural	9.68	6.11	-3.57	-0.369	
Size					
Large (≥ 43)	42.43	41.88	-0.55	-0.013	0.939
Medium (18-42)	34.80	35.54	0.74	0.021	
Small (≤ 17)	22.77	22.58	-0.19	-0.008	

NOTE: Size-adjusted school weights were used.

Table A-26. 2011 NAEP grade 8 computer-based writing original sample - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	41.23	38.50	-2.74	-0.066	0.223
Estimated grade enrollment	22.08	22.90	0.82	0.037	0.382
Race/ethnicity					
Percentage White, not Hispanic	74.97	73.28	-1.68	-0.022	0.213
Percentage Black, not Hispanic	7.90	8.54	0.64	0.081	0.280
Percentage Hispanic heritage	9.89	11.00	1.11	0.112	0.283
Percentage Asian/Pacific Islander	5.47	4.95	-0.51	-0.093	0.489
Percentage American Indian/Alaskan Native	1.78	2.22	0.44	0.247	0.343

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-27. 2011 NAEP grade 8 computer-based writing sample with substitutes - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 140)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	23.71	21.18	-2.53	-0.107	0.088
Midwest	24.93	28.85	3.92	0.157	
South	31.96	31.73	-0.23	-0.007	
West	19.40	18.24	-1.17	-0.060	
Private school reporting subgroup					
Roman Catholic	44.06	54.82	10.77	0.244	0.000
Non-Catholic Private	55.94	45.18	-10.77	-0.193	
Urban-centric locale					
City	42.21	41.86	-0.35	-0.008	0.050
Suburban	38.47	39.83	1.36	0.035	
Town	9.64	11.47	1.83	0.190	
Rural	9.68	6.84	-2.84	-0.293	
Size					
Large (≥ 43)	42.43	41.01	-1.42	-0.033	0.726
Medium (18-42)	34.80	36.01	1.20	0.034	
Small (≤ 17)	22.77	22.99	0.22	0.010	

NOTE: Size-adjusted school weights were used.

Table A-28. 2011 NAEP grade 8 computer-based writing sample with substitutes - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	41.23	38.17	-3.07	-0.074	0.142
Estimated grade enrollment	22.08	22.49	0.41	0.019	0.568
Race/ethnicity					
Percentage White, not Hispanic	74.97	72.03	-2.94	-0.039	0.015
Percentage Black, not Hispanic	7.90	9.54	1.64	0.208	0.052
Percentage Hispanic heritage	9.89	11.33	1.44	0.146	0.005
Percentage Asian/Pacific Islander	5.47	5.13	-0.33	-0.060	0.700
Percentage American Indian/Alaskan Native	1.78	1.97	0.19	0.107	0.510

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-29. 2011 NAEP grade 8 computer-based writing nonresponse-adjusted sample - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 140)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	23.71	21.34	-2.37	-0.100	0.089
Midwest	24.93	26.63	1.70	0.068	
South	31.96	32.67	0.71	0.022	
West	19.40	19.36	-0.04	-0.002	
Private school reporting subgroup					
Roman Catholic	44.06	44.45	0.39	0.009	0.254
Non-Catholic Private	55.94	55.55	-0.39	-0.007	
Urban-centric locale					
City	42.21	40.75	-1.46	-0.035	0.132
Suburban	38.47	41.17	2.70	0.070	
Town	9.64	10.92	1.28	0.133	
Rural	9.68	7.15	-2.53	-0.261	
Size					
Large (≥ 43)	42.43	39.64	-2.80	-0.066	0.366
Medium (18-42)	34.80	35.16	0.36	0.010	
Small (≤ 17)	22.77	25.20	2.44	0.107	

NOTE: Size-adjusted school weights were used.

Table A-30. 2011 NAEP grade 8 computer-based writing nonresponse-adjusted sample - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	41.23	38.06	-3.17	-0.077	0.126
Estimated grade enrollment	22.08	21.13	-0.95	-0.043	0.303
Race/ethnicity					
Percentage White, not Hispanic	74.97	72.57	-2.40	-0.032	0.094
Percentage Black, not Hispanic	7.90	9.74	1.84	0.233	0.062
Percentage Hispanic heritage	9.89	10.66	0.77	0.078	0.099
Percentage Asian/Pacific Islander	5.47	5.34	-0.12	-0.022	0.901
Percentage American Indian/Alaskan Native	1.78	1.69	-0.09	-0.051	0.417

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-31. 2011 NAEP grade 12 computer-based writing original sample - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 160)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	26.38	24.26	-2.12	-0.080	0.073
Midwest	22.62	25.32	2.70	0.119	
South	33.04	36.50	3.45	0.104	
West	17.96	13.92	-4.04	-0.225	
Private school reporting subgroup					
Roman Catholic	49.07	56.13	7.06	0.144	0.006
Non-Catholic Private	50.93	43.87	-7.06	-0.139	
Urban-centric locale					
City	44.18	44.35	0.16	0.004	0.989
Suburban	38.18	38.06	-0.12	-0.003	
Town	6.59	6.24	-0.34	-0.052	
Rural	11.05	11.35	0.30	0.027	
Size					
Large (≥ 131)	42.77	48.07	5.30	0.124	0.022
Medium (48-130)	32.73	26.05	-6.67	-0.204	
Small (≤ 47)	24.50	25.88	1.38	0.056	

NOTE: Size-adjusted school weights were used.

Table A-32. 2011 NAEP grade 12 computer-based writing original sample - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	136.64	149.38	12.75	0.093	0.020
Estimated grade enrollment	47.15	49.16	2.01	0.043	0.572
Race/ethnicity					
Percentage White, not Hispanic	76.94	79.37	2.42	0.031	0.164
Percentage Black, not Hispanic	6.88	7.25	0.36	0.052	0.630
Percentage Hispanic heritage	10.48	9.23	-1.24	-0.118	0.311
Percentage Asian/Pacific Islander	5.26	3.69	-1.57	-0.298	0.042
Percentage American Indian/Alaskan Native	0.44	0.47	0.03	0.068	0.632

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-33. 2011 NAEP grade 12 computer-based writing sample with substitutes - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 160)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	26.38	28.78	2.41	0.091	0.217
Midwest	22.62	25.29	2.67	0.118	
South	33.04	32.76	-0.28	-0.008	
West	17.96	13.16	-4.80	-0.267	
Private school reporting subgroup					
Roman Catholic	49.07	59.03	9.96	0.203	0.004
Non-Catholic Private	50.93	40.97	-9.96	-0.196	
Urban-centric locale					
City	44.18	41.50	-2.68	-0.061	0.362
Suburban	38.18	36.90	-1.28	-0.034	
Town	6.59	5.32	-1.26	-0.191	
Rural	11.05	16.28	5.23	0.473	
Size					
Large (≥131)	42.77	51.51	8.74	0.204	0.042
Medium (48-130)	32.73	25.27	-7.46	-0.228	
Small (≤47)	24.50	23.23	-1.27	-0.052	

NOTE: Size-adjusted school weights were used.

Table A-34. 2011 NAEP grade 12 computer-based writing sample with substitutes - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	136.64	147.59	10.96	0.080	0.011
Estimated grade enrollment	47.15	50.36	3.21	0.068	0.419
Race/ethnicity					
Percentage White, not Hispanic	76.94	80.77	3.82	0.050	0.038
Percentage Black, not Hispanic	6.88	6.64	-0.24	-0.035	0.754
Percentage Hispanic heritage	10.48	8.77	-1.71	-0.163	0.166
Percentage Asian/Pacific Islander	5.26	3.41	-1.84	-0.350	0.015
Percentage American Indian/Alaskan Native	0.44	0.41	-0.03	-0.068	0.428

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-35. 2011 NAEP grade 12 computer-based writing nonresponse-adjusted sample - weighted percentages of full sample and responding schools by various subgroups - all private schools (sample size = 160)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Census region					
Northeast	26.38	29.57	3.19	0.121	0.223
Midwest	22.62	21.64	-0.97	-0.043	
South	33.04	34.43	1.39	0.042	
West	17.96	14.35	-3.61	-0.201	
Private school reporting subgroup					
Roman Catholic	49.07	52.43	3.36	0.068	0.197
Non-Catholic Private	50.93	47.57	-3.36	-0.066	
Urban-centric locale					
City	44.18	40.74	-3.44	-0.078	0.272
Suburban	38.18	38.19	0.01	0.000	
Town	6.59	4.77	-1.81	-0.275	
Rural	11.05	16.30	5.25	0.475	
Size					
Large (≥ 131)	42.77	48.22	5.44	0.127	0.167
Medium (48-130)	32.73	27.23	-5.50	-0.168	
Small (≤ 47)	24.50	24.55	0.05	0.002	

NOTE: Size-adjusted school weights were used.

Table A-36. 2011 NAEP grade 12 computer-based writing nonresponse-adjusted sample - weighted mean values of various characteristics for full sample and responding schools - all private schools

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Size of school attended by average student	136.64	141.71	5.07	0.037	0.264
Estimated grade enrollment	47.15	46.76	-0.39	-0.008	0.920
Race/ethnicity					
Percentage White, not Hispanic	76.94	80.30	3.36	0.044	0.059
Percentage Black, not Hispanic	6.88	6.83	-0.05	-0.007	0.952
Percentage Hispanic heritage	10.48	8.92	-1.55	-0.148	0.196
Percentage Asian/Pacific Islander	5.26	3.57	-1.69	-0.321	0.025
Percentage American Indian/Alaskan Native	0.44	0.37	-0.07	-0.159	0.050

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Appendix B

Table B-1. 2011 NAEP grade 8 original sample - weighted percentages of full sample and responding students by various subgroups - public school students in Detroit TUDA (sample size = 1,658)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Sex					
Male	47.84	47.10	-0.73	-0.015	0.238
Female	52.16	52.90	0.73	0.014	
Race					
White, not Hispanic	3.01	3.06	0.06	0.020	0.721
Black, not Hispanic	87.08	86.82	-0.25	-0.003	
Hispanic heritage	9.92	10.11	0.20	0.020	
Relative age					
Old (Born in 9/96 or earlier)	20.76	18.62	-2.14	-0.103	0.000
Not old (Born in 10/96 or later)	79.24	81.38	2.14	0.027	
Free lunch eligibility					
Student not eligible	18.60	18.61	0.01	0.001	0.930
Free or reduced lunch	80.80	80.82	0.02	0.000	
Missing	0.60	0.57	-0.03	-0.050	
SD					
Yes	10.06	8.77	-1.29	-0.128	0.001
No	89.94	91.23	1.29	0.014	
ELL					
Yes	9.38	9.97	0.59	0.063	0.037
No	90.62	90.03	-0.59	-0.007	

Table B-2. 2011 NAEP grade 8 nonresponse-adjusted sample - weighted percentages of full sample and nonresponse adjusted responding students by various subgroups - public school students in Detroit TUDA (sample size = 1,658)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Sex					
Male	47.84	48.16	0.32	0.007	0.510
Female	52.16	51.84	-0.32	-0.006	
Race					
White,Asian, American Indian, not Hispanic	3.01	3.01	0.01	0.003	0.985
Black, not Hispanic	87.08	87.11	0.03	0.000	
Hispanic heritage	9.92	9.87	-0.04	-0.004	
Relative age					
Old (Born in 9/96 or earlier)	20.76	20.65	-0.11	-0.005	0.757
Not old (Born in 10/96 or later)	79.24	79.35	0.11	0.001	
Free lunch eligibility					
Student not eligible	18.60	18.54	-0.06	-0.003	0.968
Free or reduced lunch	80.80	80.88	0.08	0.001	
Missing	0.60	0.58	-0.02	-0.033	
SD					
Yes	10.06	9.68	-0.38	-0.038	0.081
No	89.94	90.32	0.38	0.004	
ELL					
Yes	9.38	9.65	0.27	0.029	0.206
No	90.62	90.35	-0.27	-0.003	

Table B-3. 2011 NAEP grade 8 original sample- weighted percentages of full sample and responding students by various student level subgroups - public school students in Colorado (sample size = 2,445)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Sex					
Male	50.30	50.35	0.05	0.001	0.937
Female	49.70	49.65	-0.05	-0.001	
Race					
White, not Hispanic	58.93	56.45	-2.48	-0.042	0.004
Black, not Hispanic	5.21	6.26	1.05	0.202	
Hispanic heritage	28.13	29.62	1.49	0.053	
Asian/Pacific Islander	3.57	3.75	0.17	0.048	
American Indian/Alaskan Native	0.72	0.61	-0.11	-0.153	
Two or More Races	3.44	3.32	-0.12	-0.035	
Relative age					
Old (Born in 9/96 or earlier)	18.51	18.75	0.24	0.013	0.539
Not old (Born in 10/96 or later)	81.49	81.25	-0.24	-0.003	
Free lunch eligibility					
Student not eligible	61.89	60.86	-1.04	-0.017	0.157
Free or reduced lunch	37.94	39.14	1.20	0.032	
Missing	0.16	0.00	-0.16	-1.000	
SD					
Yes	9.43	9.23	-0.19	-0.020	0.586
No	90.57	90.77	0.19	0.002	
ELL					
Yes	7.58	8.31	0.73	0.096	0.016
No	92.42	91.69	-0.73	-0.008	

Table B-4. 2011 NAEP grade 8 original sample - weighted percentages of full sample and responding students by various school level subgroups - public school students in Colorado (sample size = 2,445)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Urban-centric locale					
City	29.73	35.05	5.32	0.179	0.000
Suburban	35.42	25.85	-9.57	-0.270	
Town	8.03	8.12	0.09	0.011	
Rural	26.83	30.98	4.16	0.155	
Size					
Large (>261)	38.40	37.48	-0.91	-0.024	0.118
Medium (128-261)	38.11	35.91	-2.20	-0.058	
Small (<128)	23.49	26.60	3.11	0.132	
Achievement level					
High	52.42	47.64	-4.78	-0.091	0.013
Low	47.58	52.36	4.78	0.100	

Table B-5. 2011 NAEP grade 8 original sample - weighted percentages of full sample and responding students by various school level subgroups - public school students in Colorado (sample size = 2,445)

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Average Student Achievement of School					
Attended by Average Student	47.71	45.46	-2.25	-0.047	0.012
Estimated grade enrollment	236.85	232.17	-4.69	-0.020	0.215
Race/ethnicity					
Percentage White, not Hispanic	64.32	61.49	-2.83	-0.044	0.002
Percentage Black, not Hispanic	5.88	6.68	0.80	0.136	0.001
Percentage Hispanic heritage	24.98	27.00	2.02	0.081	0.004
Percentage Asian/Pacific Islander	3.79	3.85	0.07	0.018	0.374
Percentage American Indian/Alaskan Native	1.03	0.98	-0.05	-0.049	0.096

Table B-6. 2011 NAEP grade 8 non-response adjusted sample - weighted percentages of full sample and responding students by various student level subgroups - public school students in Colorado (sample size = 2,445)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Sex					
Male	50.30	50.34	0.04	0.001	0.934
Female	49.70	49.66	-0.04	-0.001	
Race					
White, not Hispanic	58.93	57.86	-1.07	-0.018	0.128
Black, not Hispanic	5.21	5.70	0.49	0.094	
Hispanic heritage	28.13	28.73	0.60	0.021	
Asian/Pacific Islander	3.57	3.96	0.39	0.109	
American Indian/Alaskan Native	0.72	0.60	-0.12	-0.167	
Two or More Races	3.44	3.15	-0.29	-0.084	
Relative age					
Old (Born in 9/96 or earlier)	18.51	18.13	-0.38	-0.021	0.173
Not old (Born in 10/96 or later)	81.49	81.87	0.38	0.005	
Free lunch eligibility					
Student not eligible	61.89	62.25	0.36	0.006	N/A
Free or reduced lunch	37.94	37.75	-0.19	-0.005	
Missing	0.16	0.00	-0.16	-1.000	
SD					
Yes	9.43	9.05	-0.38	-0.040	0.376
No	90.57	90.95	0.38	0.004	
ELL					
Yes	7.58	7.95	0.36	0.047	0.184
No	92.42	92.05	-0.36	-0.004	

Table B-7. 2011 NAEP grade 8 nonresponse adjusted sample - weighted percentages of full sample and responding students by various school level subgroups - public school students in Colorado (sample size = 2,445)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
Urban-centric locale					
City	29.73	29.73	0.00	0.000	0.921
Suburban	35.42	35.42	0.00	0.000	
Town	8.03	8.03	0.00	0.000	
Rural	26.83	26.83	0.00	0.000	
Size					
Large (>261)	38.40	37.46	-0.94	-0.024	0.229
Medium (128-261)	38.11	36.12	-1.99	-0.052	
Small (<128)	23.49	26.42	2.93	0.125	
Achievement level					
High	52.42	49.15	-3.27	-0.062	0.011
Low	47.58	50.85	3.27	0.069	

Table B-8. 2011 NAEP grade 8 nonresponse adjusted sample - weighted percentages of full sample and responding students by various school subgroups - public school students in Colorado (sample size = 2,445)

	Full sample mean	Respondent mean	Bias	Relative bias	T-test p-value
Average Student Achievement of School					
Attended by Average Student	47.71	46.11	-1.60	-0.034	0.009
Estimated grade enrollment	236.85	234.01	-2.84	-0.012	0.547
Race/ethnicity					
Percentage White, not Hispanic	64.32	62.48	-1.84	-0.029	0.004
Percentage Black, not Hispanic	5.88	6.14	0.26	0.044	0.082
Percentage Hispanic heritage	24.98	26.34	1.36	0.054	0.015
Percentage Asian/Pacific Islander	3.79	4.08	0.30	0.079	0.006
Percentage American Indian/Alaskan Native	1.03	0.95	-0.08	-0.078	0.003